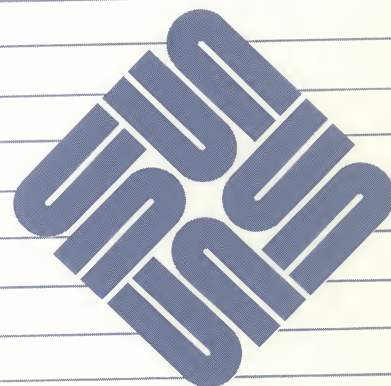


Radan



# 150 Mbyte 1/4-Inch Cartridge Tape Drive Configuration Manual for the 56-Inch Data Center Cabinet







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# 150 Mbyte 1/4-Inch Cartridge Tape Drive Configuration Manual for the 56-Inch Data Center Cabinet

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## Preface

|                             |                                                                                                                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose of Manual</b>    | This manual contains configuration data for the 150 Mbyte ¼-Inch Tape Drive. This data is independent of any particular application. Procedures for installation and configuration for any particular product are contained in the installation procedure for that product. |
| <b>Summary of Contents</b>  | The contents of this manual are:                                                                                                                                                                                                                                            |
| <b>Chapter 1</b>            | Introduction - Discusses the electrical and mechanical features and specifications of the Sun Microsystems 150 Mbyte ¼-Inch Tape Drive.                                                                                                                                     |
| <b>Chapter 2</b>            | Configuration - Describes the various configurations of the 150 Mbyte ¼-Inch Tape Drive that are available.                                                                                                                                                                 |
| <b>Revisions</b>            | The table of revisions, located in the back of this manual is maintained as a record of changes to this manual.                                                                                                                                                             |
| <b>Applicable Documents</b> | Table P-1 is a list of documents that contain further information on subjects related to the Sun Microsystems 150 Mbyte ¼-Inch Tape Drive                                                                                                                                   |



Table P-1. Applicable Documents 150 Mbyte 1/4-Inch Cartridge Tape Drive.

| Document                                                                                     | Source                                              |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 150 Mbyte 1/4-Inch Cartridge Tape Drive Installation Manual for the Sun 56-Inch Data Center. | Sun Microsystems, Inc.<br>813-1058-xx               |
| 150 Mbyte 1/4-Inch Cartridge Tape Drive Installation Manual for the 12-Slot Office Pedestal  | Sun Microsystems, Inc.<br>813-1057-xx               |
| Installing SunOS on a Sun Workstation                                                        | Sun Microsystems, Inc.<br>800-1317-xx               |
| System and Network Administration for the Sun Workstation                                    | Sun Microsystem, Inc.<br>813-2062-xx                |
| Commands Reference Manual for the Sun Workstation                                            | Sun Microsystem, Inc.<br>800-1295-xx                |
| Sun Diagnostic Executive User's Guide.                                                       | Sun Microsystems, Inc.<br>800-3273-xx               |
| Product Manual SCSI Model 2150S Archives Corporation (21391-001)                             | Sun Microsystems Inc.                               |
| SCSI Host Adapter                                                                            | 875-1044-xx<br>Sun Microsystem, Inc.<br>813-2077-xx |

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## Introduction

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## Introduction

### 1.1. Scope

This chapter discusses the features and specifications of the 150 Mbyte for the 1/4-Inch Cartridge Tape Drive. These features are divided into two categories, electrical and mechanical. The specifications cover the physical dimensions and environmental characteristics. In addition, the media required for operation of the tape drive is discussed.

### 1.2. Electrical

The 150 Mbyte 1/4-Inch Cartridge Tape Drive is equipped with an intelligent controller, and an embedded Small Computer System Interface (SCSI). Data is transferred at 112.5 KB/second from a 64 KB buffer. The SCSI burst rate is 1.8 Mbyte/second.

The SCSI is in compliance with ANSI X3.131 and QIC-104, the sequential storage device implementation standard. The drive ID is configured by jumpers on the rear assembly. The Target ID Number is either four (4) or five (5), the logical unit number is always zero (0). Full SCSI bus arbitration, with disconnect and reconnect, is supported for multi-target/multi-initiator systems. The command set includes support for random access processing and applications. Support is also provided for applications that maintain strategic block address.

Figure 1-1 illustrates the 150 Mbyte 1/4-Inch Cartridge Tape Drive for the Full High version. Table 1-1 lists the electrical requirements, and Table 1-2 lists the data specifications.

Figure 1-1 150 Mbyte 1/4-Inch Cartridge Tape Drive

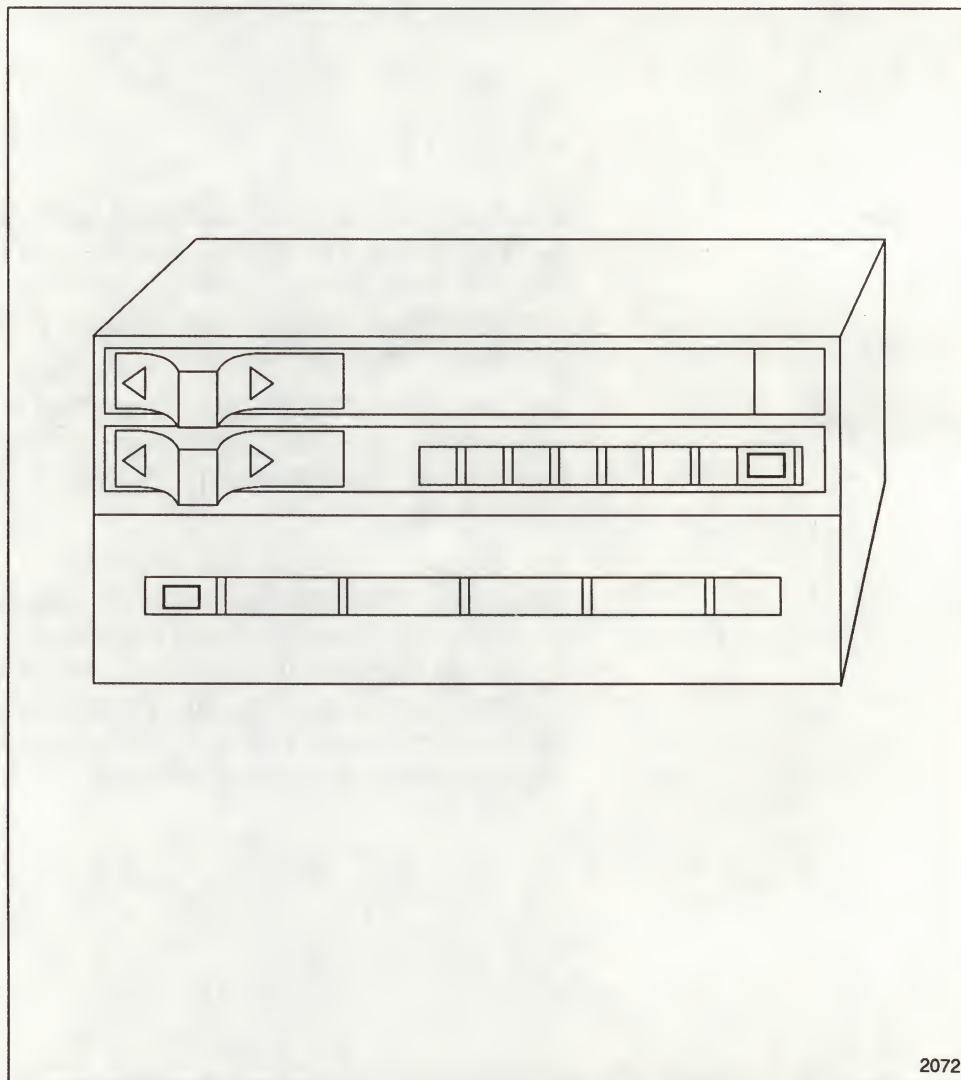




Table 1-1 *Electrical Specifications 150 Mbyte 1/4-Inch Cartridge Tape Drive*

| Requirements         | Specifications             |                |
|----------------------|----------------------------|----------------|
|                      | +12 Volts                  | +5 Volts       |
| Tolerance            | +/- 10%                    | +/- 5%         |
| Max Ripple           | 200 millivolts             | 100 millivolts |
| Standby Current:     | 0.2A Nominal               | 0.3A Nominal   |
| Operational Current: | 1.5A Nominal               | 0.7A Nominal   |
| Tape Start Surge     | 2.5A Maximum               | 1.0A Maximum   |
|                      | Up to 300 ms               | 2.5A Maximum   |
|                      |                            | Up to 300 ms   |
| Power Dissipation    | 23W typical<br>35W Maximum |                |

Table 1-2 *Data Specifications 150 Mbyte 1/4-Inch Cartridge Tape Drive.*

| FEATURE               | SPECIFICATIONS                                                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Capacity, Formatted   | 150 Megabytes (600ft. Tape)                                                                            |
| Tracks, Layout        | 18 Track Serpentine                                                                                    |
| Data Density          | 10,000 bpi                                                                                             |
| Flux Density          | 12,500 frpi                                                                                            |
| Average Transfer Rate | 112.5KB/second                                                                                         |
| Burst Transfer Rate   | 1.8 Mbyte/second maximum                                                                               |
| Recording Format      | QIC-150                                                                                                |
| Read Compatability    | QIC-11, QIC-24, QIC-120, or QIC-150                                                                    |
| Data Buffer           | 64 KB                                                                                                  |
| Tape Speed            | 90 ips                                                                                                 |
| Speed Variations      | Short Term +/- 7%<br>Long Term +/- 4%                                                                  |
| Start/Stop Time       | 300 milliseconds, Maximum                                                                              |
| Head Configuration    | Two track read while write,<br>one track in each direction,<br>with separate full width<br>erase head. |
| Recording Code        | GCR (0,2) Run Length Limited.                                                                          |



### 1.3. Mechanical

The 5-1/4 inch package fits into the industry-standard 5-1/4 inch form factor. The 150 Mbyte 1/4-Inch Cartridge Tape Drive consists of the drive mechanism, a front bezel, and an integral SCSI controller. A brushless DC motor is used for capstan drive. A semi-elastic flat belt drive transmits mechanical power to the capstan pulley driving the tape. The front bezel guides a tape into the loading aperture.

Mechanical connection to the system is achieved through four mounting holes on the underside for horizontal mounting of the full-high tape drive.

### 1.4. Specifications

Table 1-3 lists the physical dimensions for the 150 Mbyte 1/4-Inch Cartridge Tape Drive. Table 1-4 lists the environmental characteristics for the 150 Mbyte Tape Drive.

Table 1-3 *Physical Dimensions, 150 Mbyte 1/4-Inch Cartridge Tape Drive.*

| DIMENSIONS | MEASUREMENT                      |
|------------|----------------------------------|
| Height     | 3.25 inches (8.232 cm) Full High |
| Width      | 5.75 inches (14.605)             |
| Depth      | 8.3 inches (27.94 cm) Maximum    |
| Weight     | 3.0 pounds (1.36)                |

Table 1-4 *Environmental Characteristics 150 Mbyte 1/4-Inch Cartridge Tape Drive.*

| REQUIREMENTS                 | SPECIFICATIONS                 |
|------------------------------|--------------------------------|
| Operational Temperature      | +5 to 45 degrees C             |
| Storage Temperature          | -30 to +60 degrees C           |
| Relative Humidity            | 20 to 80%                      |
| Maximum Wet Bulb Temperature | 26 degrees C<br>(79 degrees F) |
| Altitude                     | -1,000 to +15,000 ft.          |

### 1.5. Media

Data is recorded industry-standard tape that have been qualified for operation at 12,500 bpi. Use 3M DC6150 or equivalent tapes for write operations. The drive can only read 45 Mbyte or 60 Mbyte tapes.

Figure 1-2 illustrates a standard tape cartridge. Table 1-5 lists the tape specifications.

Figure 1-2 *Standard Tape Cartridge*

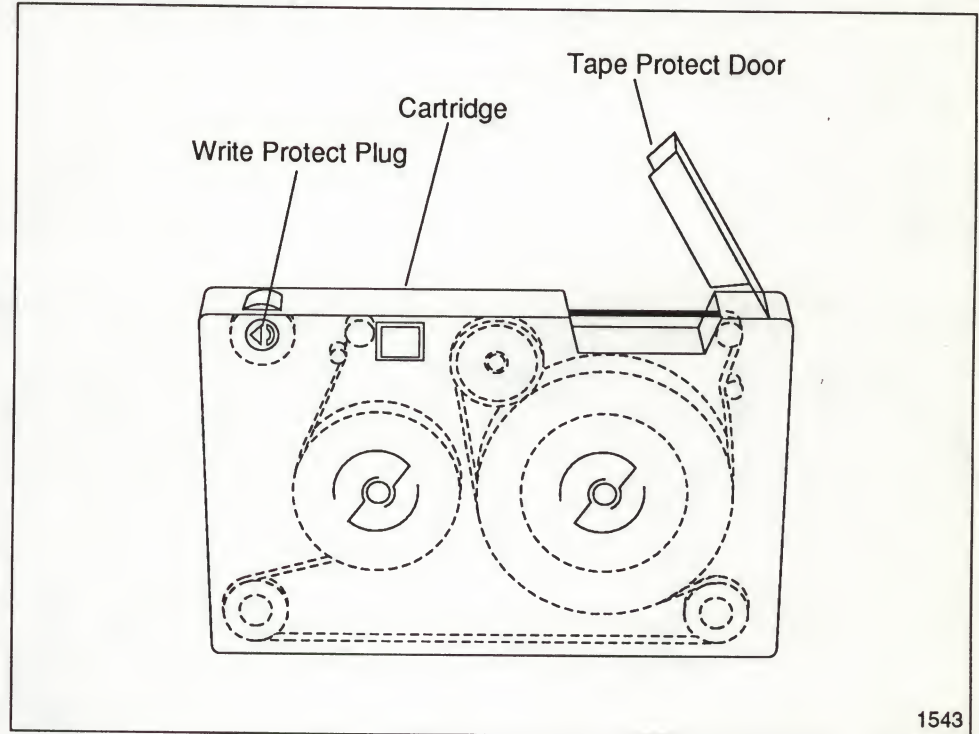


Table 1-5 *Tape Specifications 150 Mbyte 1/4-Inch Tape Drive.*

| TAPE SPECIFICATION | QUALIFIED TAPE | FUNCTION               |
|--------------------|----------------|------------------------|
| ANSI X3B5/87-165   | DC600XTD       | Read/Write (QIC-150)   |
|                    | DC6150         | Read/Write (QIC-150)   |
| ANSI BSR X3.127    | 3M DC300XLP    | Read Only (QIC-24, 11) |
| ANSI X3B5/85-138   | 3M DC600A      | Read Only (QIC-120)    |
|                    |                | Read Only (QIC-24, 11) |





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## Configuration

|                               |    |
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## Configuration

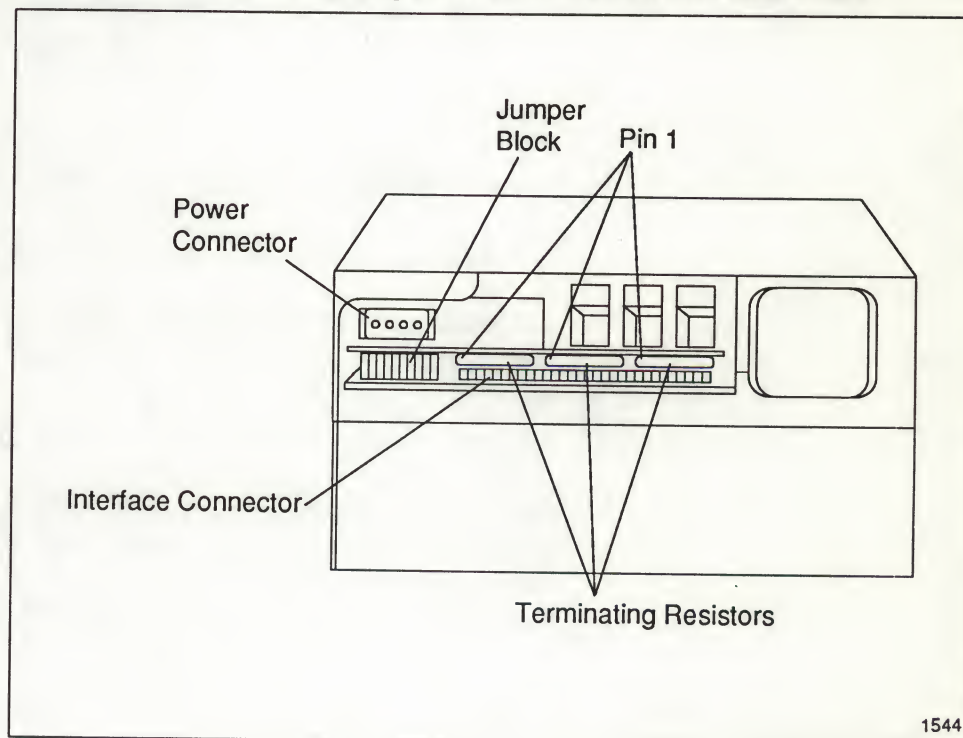
### 2.1. Introduction

This section provides information on the configuration of the 150 Mbyte 1/4-Inch Cartridge Tape Drive. Refer to the 56-Inch Data Center Installation Manual for configuration information on the specific system.

### 2.2. Unit Configuration

The 150 Mbyte 1/4-Inch Tape Drive must be properly terminated if it is the last drive on the SCSI Bus. The drive includes terminator resistor packs located at the back of the unit as illustrated in Figure 2-1. The terminator resistors must be removed from the back of the tape drive if the drive is not the last drive on the bus.

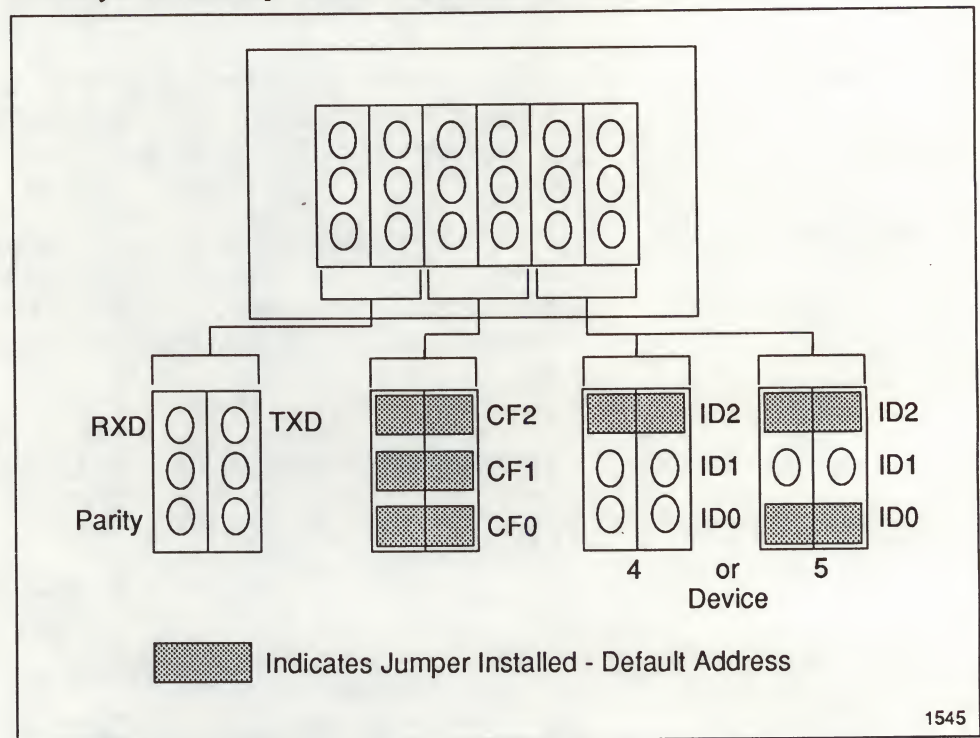
Figure 2-1 150 Mbyte 1/4-Inch Cartridge Tape Drive Terminator Resistors Location





Configuration of the 150 Mbyte 1/4-Inch Cartridge Tape Drive is accomplished by a set of jumper blocks located in the lower right-hand corner of the rear panel. The block contains nine connector pairs arranged in three columns of three pairs each. Figure 2-2 illustrates the configuration jumper block settings for the 150 Mbyte 1/4-Inch Cartridge Tape Drive. Each column provides a different segment of configuration information. The left-most column, viewed from the rear of the drive, is parity and transmission data. The middle column is disconnect size. The right-most column is the tape drive identifier.

Figure 2-2 150 Mbyte 1/4-Inch Tape Drive Configuration Jumper Block



The lower pair of connectors in the parity transmission data column is the parity enable/disable. Parity is enabled when the pair is jumpered together.

The three jumper pairs in the middle define the disconnect size. This represents the maximum number of bytes that can be transferred over the bus during a single data cycle. It is a function of system performance, and is critical when two or more drives must compete for bus time. The larger the disconnect size, the longer a single device has control of the bus. Short disconnect size causes the device to waste time on bus arbitration. The optimum setting is determined by the number of devices and the rate that each device can process a burst of data.

Table 2-1 lists the appropriate hexadecimal code for a given disconnect size. When the jumper is in, the corresponding bit is set to one. Jumper CF2 is the most significant bit.

Table 2-1 *Disconnect Size Jumper Settings*

| CF2 | CF1 | CF0 | CODE | DISCONNECT SIZE      |
|-----|-----|-----|------|----------------------|
| 0   | 0   | 0   | 0    | 2K                   |
| 0   | 0   | 1   | 1    | 4K                   |
| 0   | 1   | 0   | 2    | 6K                   |
| 0   | 1   | 1   | 3    | 8K                   |
| 1   | 0   | 0   | 4    | 12K                  |
| 1   | 0   | 1   | 5    | 16K                  |
| 1   | 1   | 0   | 6    | 24K                  |
| 1   | 1   | 1   | 7    | 32K(Factory Setting) |

Drive address is determined by the far right column of jumpers. This 3-bit hexadecimal number determines the priority of the controller during bus arbitration. The top bit is the most significant bit. A jumper installed indicates that the corresponding bit is set. Table 2-2 defines the available bit configurations.

Table 2-2 *Drive Address Jumper Settings*

| ID2 | ID1 | ID0 | Controller ID |
|-----|-----|-----|---------------|
| 0   | 0   | 0   | 0 Disk Device |
| 0   | 0   | 1   | 1 Disk Device |
| 0   | 1   | 0   | 2 Disk Device |
| 0   | 1   | 1   | 3 Disk Device |
| 1   | 0   | 0   | 4 Tape        |
| 1   | 0   | 1   | 5 Tape        |
| 1   | 1   | 0   | 6 CD-ROM      |
| 1   | 1   | 1   | 7 (Reserved)  |

**NOTE** Use address 4 if there is no 2.3 GByte tape drive in the Data Center Cabinet. Use address 5 otherwise.

Table 2-3 Defines the switch settings for Sun Microsystems platforms. Each platform is identified and a physical description is included. The parity settings and Target Identification Numbers are included. ESM in the table stands for External Storage Module.

The Desktop Tape Pack (DTP) version incorporates a switch on the rear of the enclosure to set the Target Identification Number.



Table 2-3 *System Configuration Settings*

| Part Number | Platform | Description             | Parity | Target ID |
|-------------|----------|-------------------------|--------|-----------|
| 370-1205-nn | 4/330    | Half-High, Black Bezel  | Out    | 4/5       |
| 370-1206-nn | 3/470    | Full-High, Black Bezel  | Out    | 4/5       |
| 370-1206-nn | 4/370    | Full-High, Black Bezel  | Out    | 4/5       |
| 370-1206-nn | 4/390    | Full-High, Black Bezel  | Out    | 4/5       |
| 370-1206-nn | 4/490    | Full-High, Black Bezel  | Out    | 4/5       |
| 370-1218-nn | DTP      | Half-High, Custom Bezel | Out    | 4/5       |
| 370-1246-nn | ESM      | Full-High, Grey Bezel   | In     | 4/5       |
| 370-1293-nn | ESM      | Half High, Grey Bezel   | In     | 4/5       |

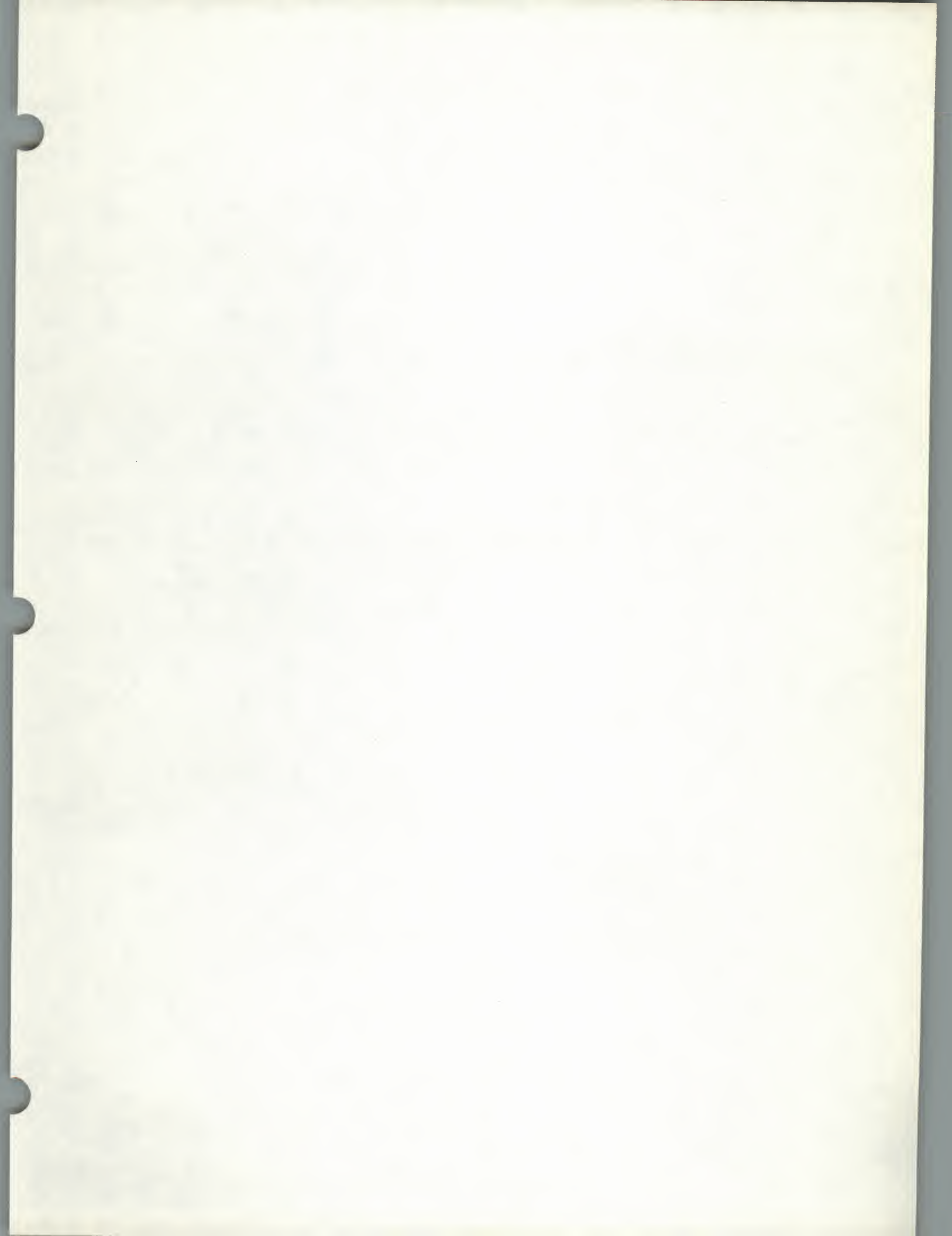


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## Revision History

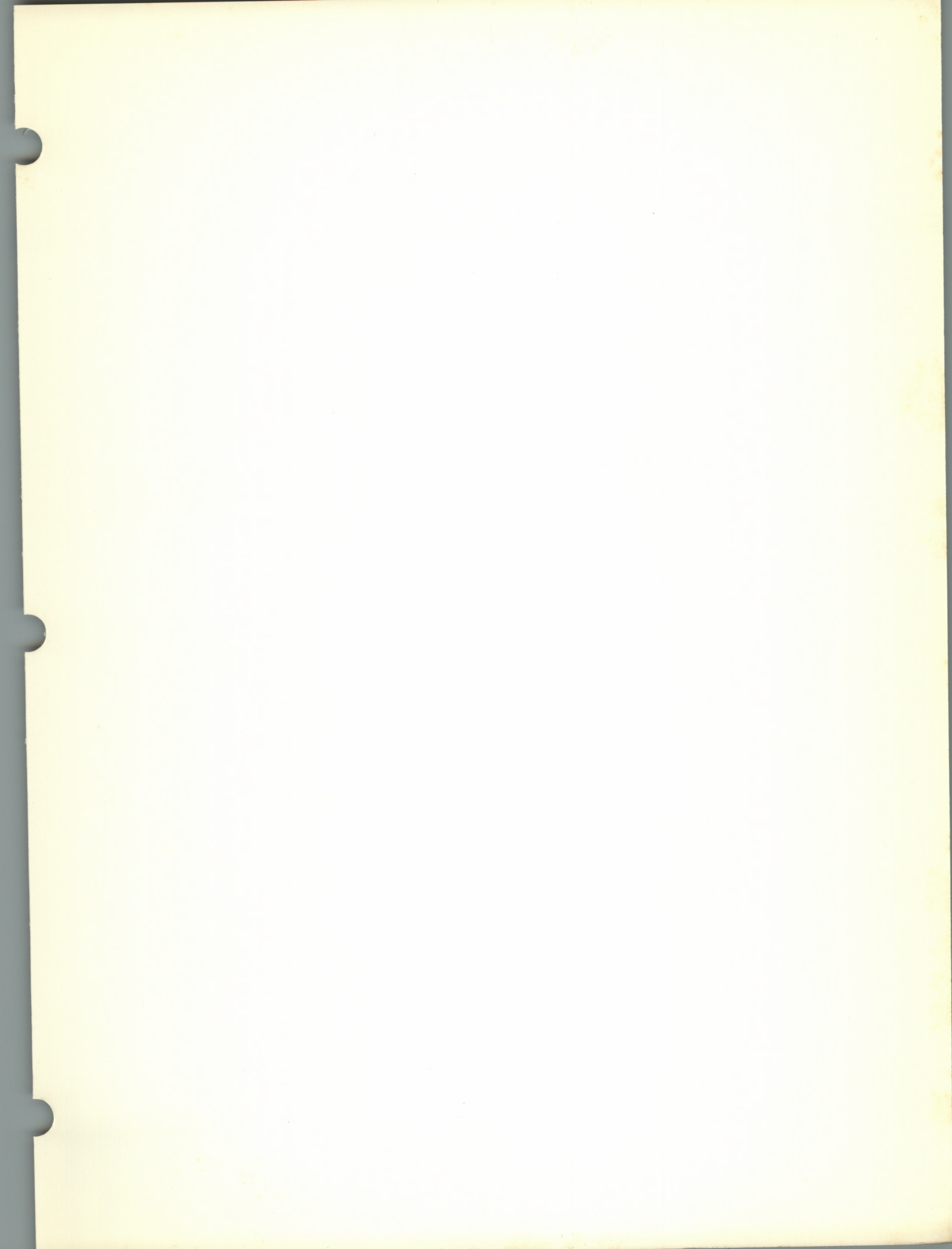
| Dash Number | Revision | Date               | Comments                |
|-------------|----------|--------------------|-------------------------|
| 05          | 50       | 6 July, 1989       | Beta Draft              |
| 10          | A        | 26 September, 1989 | First Customer Shipment |











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